VARIABLE CAPACITY CONDENSING UNIT

FIELD OF THE INVENTION

[0001] The present invention generally relates to a condensing unit for use in an air conditioning system. More specifically, the present invention relates to a variable capacity condensing unit for use in the air conditioning system.

BACKGROUND OF THE INVENTION

[0002] Condensing units are well known for removing heat from refrigerant being circulated in a refrigerant circuit to cool a climate-controlled area. A typical condensing unit includes a compressor for compressing the refrigerant in the refrigerant circuit and a condenser, which receives the compressed refrigerant from the compressor and cools and condenses the refrigerant. The refrigerant, once condensed, is conveyed to an evaporator unit. The evaporator unit is positioned inside the climate-controlled area and includes an evaporator for transferring heat from air in the climate-controlled area to the refrigerant. The condensing unit is typically outside of the climate-controlled area and serves to compress and cool the refrigerant after the evaporator has transferred the heat from the air to the refrigerant. In essence, the condensing unit dispenses the heat of the air in the climate-controlled area to outside of the climate-controlled area.

[0003] Condensing units can come in a wide variety of capacities depending upon the particular application and the cooling power required. As a result, installers must maintain a large inventory of condensing units to accommodate their customers. As can be appreciated, such a large inventory can reduce efficiency and profitability. As a result, there is a need in the art for variable capacity condensing units that can be easily assembled based on the particular use to which the condensing unit is being applied.

[0004] One attempt at meeting this need is shown in United States Patent No. 5,953,929 to Bauman et al. Bauman et al. discloses a modular refrigeration unit. In Bauman et al., the components of the refrigeration unit include an evaporator, condenser, and compressor, which can be easily assembled for quick installations. Bauman et al., however, does not teach a modular refrigeration unit that can accommodate components of varying dimensions.

[0005] The ability to accommodate components of varying dimensions would allow installers to maintain smaller inventories, while accommodating the same customers.

For instance, in a first application, the customer's condensing unit may require a compressor having a small compression rate, while in a second application, the condensing unit may require a larger compressor having a larger capacity. Similarly, in the first application, the condensing unit may require a condenser having a large capacity, while in the second application, the condensing unit may require a smaller condenser having a small capacity. Typically, the condensing unit includes a base to support the compressor and condenser, but the base is configured to receive only one dimension of compressor and condenser. If the condensing unit were configured to accommodate varying dimensions of compressors and condensers, then the installer would not have to store different condenser units that have different compressors and condensers of varying dimensions to meet their customer's needed cooling capacity. Instead, the installer could inventory one chassis and customize the chassis based on the cooling capacity needed.

SUMMARY OF THE INVENTION AND ADVANTAGES

[0006] The present invention provides a condensing unit for removing heat from refrigerant being circulated in a refrigerant circuit to cool a climate-controlled area. The condensing unit comprises a compressor having a predefined dimension to compress the refrigerant and a condenser having a predefined dimension in fluid communication with the compressor to cool and condense the refrigerant. A base supports the compressor and condenser. The base includes first and second mounting mechanisms wherein the compressor is secured to one of the mounting mechanisms depending on the predefined dimension of the compressor. The base also defines inner and outer support channels wherein one of the support channels supports the condenser depending on the predefined dimension of the condenser.

[0007] The present invention provides the ability to accommodate components of varying dimensions to allow installers to maintain smaller inventories, while accommodating the same customers. By utilizing the mounting mechanisms and the support channels, the condensing unit is configured to accommodate compressors and condensers of varying dimensions. Hence, the installer does not have to store multiple condenser units of varying capacity to meet their client's particular cooling needs. Instead, the installer can inventory one chassis for the condensing unit and customize the chassis based on required cooling needs.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Advantages of the present invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

[0009] Figure 1 is a perspective view of an air conditioning system of the present invention;

[0010] Figure 2 is a partially-assembled, partially-exploded, perspective view of a condensing unit of the present invention;

[0011] Figure 2A is a partially-assembled, partially-exploded, perspective view of a condensing unit of an alternative embodiment of the present invention;

[0012] Figure 3 is a top view of a base of the condensing unit of the present invention;

[0013] Figure 3A is a top view of a base of the condensing unit of the alternative embodiment of the present invention;

[0014] Figure 4 is a cross-sectional view of the base of the condensing unit as viewed along the line 4-4 in Figure 3;

[0015] Figure 5 is a blown-up view of the base of the condensing unit as shown in Figure 2 illustrating the connection of the base with a guide rail; and

[0016] Figure 6 is a blown-up view of the guide rail of the condensing unit as shown in Figure 2 illustrating the connection of a condenser and close-out panel to the guide rail.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0017] Referring to the Figures, wherein like numerals indicate like or corresponding parts throughout the several views, an air conditioning system is generally shown at **10.** Referring to FIG. 1, the air conditioning system **10** comprises a circuit **12** to transport refrigerant, e.g., carbon dioxide, R134A, R410A, or any other fluid capable of heat transfer, to various components of the air conditioning system **10** to facilitate removal of the heat from the air in a climate-controlled area **14**, i.e., to cool the climate-controlled area **14**. It should be appreciated that while the embodiment illustrated herein shows the air conditioning system **10** being used to cool an interior **16** of a building **18**, the present invention should not be so limited. For instance, the air conditioning system **10** could

also be utilized in any commercial or domestic refrigeration units, such as meat lockers and the like. Likewise, it should also be appreciated that the components of the air conditioning system **10** that are in fluid communication with the refrigerant circuit **12** are generally illustrated. In other words, the present invention is not limited to the particular configuration of the refrigerant circuit **12** and the components attached thereto.

[0018] Generally speaking, the components of the air conditioning system **10** include an evaporator **20** in fluid communication with the refrigerant circuit **12** to transfer the heat from the air in the climate-controlled area **14** to the refrigerant. Referring to FIG. 2, a compressor **22** is in fluid communication with the refrigerant circuit **12** to receive the refrigerant from the evaporator **20** and compress the refrigerant in the refrigerant circuit **12**. A heat exchanger **24** is in fluid communication with the refrigerant circuit **12** to cool and condense the refrigerant from the compressor **22**, or to simply cool the refrigerant. As will be appreciated by those skilled in the art, the heat exchanger **24** can be further defined as either a condenser **24**, or a gas cooler **24** when carbon dioxide is the refrigerant, i.e., cooling medium. For purposes of the description, the heat exchanger **24** shall be defined as the condenser **24**. Once the refrigerant is cooled, the refrigerant is cycled back to the evaporator **20**. As will be appreciated by those skilled in the art, additional components could be included in the refrigerant circuit **12**. For instance, an expansion device such as an orifice tube could be positioned between the condenser **24** and the evaporator **20** to expand the cooled refrigerant from the condenser **24**. Likewise, an accumulator-dehydrator could be positioned between the evaporator **20** and the compressor **22** to separate liquid and gas refrigerant from the evaporator **20**. Of course, other configurations and/or components may also be employed.

[0019] The air conditioning system **10** can be separated into two basic units, an evaporator unit **26** and a condensing unit **28**. Referring back to FIG. 1, the evaporator unit **26** is typically positioned inside the climate-controlled area **14** and includes the evaporator **20** to transfer the heat from the air in the climate-controlled area **14** to the refrigerant. An enclosure **30** surrounds the evaporator **20** and defines an inlet air duct **32** and a supply air duct **34**. A fan unit (not shown) is positioned within the enclosure **30** to draw in air from the climate-controlled area **14** though the inlet air duct **32** and blow the air across the evaporator **20** and back to the climate-controlled area **14** via the supply air duct **34**. As the air moves across the evaporator **20**, the refrigerant absorbs the heat from the air, thus cooling the air that is returned to the climate-controlled area **14**.

[0020] Referring now to FIGS. 1 and 2, the condensing unit **28** is typically positioned outside of the climate-controlled area **14** and includes the compressor **22**, which receives the refrigerant from the evaporator **20** in the evaporator unit **26** and compresses the refrigerant. The condensing unit **28** also includes at least one condenser **24** that serves to cool and condense the gas refrigerant from the compressor **22**. The refrigerant circuit **12** comprises a plurality of fluid conduits **36** to convey the refrigerant between the evaporator **20** and the compressor **22**, between the compressor **22** and the condenser **24**, and between the condenser **24** and the evaporator **20**. The fluid conduits **36** may comprise any suitable material utilized in air conditioning systems **10** including copper tubing, multi-layered rubber hoses, and the like.

[0021] A multi-piece chassis **38** supports and protects the compressor **22** and condenser **24**. Referring to FIGS. 3 and 4, the chassis **38** comprises a base **40** to support the compressor **22** and condenser **24**. The base **40** includes a vertical axis **A** extending through a central point of the base **40**. Preferably, the base **40** comprises blow-molded plastic and is hollow. The base **40** may be filled with a substance, e.g., water or sand, to provide weight to secure the base **40** in position. The base **40** could also be solid and stamped, or solid and formed from injection-molded plastic.

[0022] The base **40** includes a plurality of mounting mechanisms to adapt the base **40** to receive compressors of varying dimensions. The compressor has a predefined dimension and the compressor **22** engages one of the mounting mechanisms based on the predefined dimension. In other words, the particular mounting mechanism used to secure the compressor **22** to the base **40** is based on the predefined dimension. Referring specifically to FIG. 3, the mounting mechanisms are further defined as mounting platforms **44a-d,46a-d,48a-d**. A first mounting mechanism is a first mounting platform **44a-d**, which is shown supporting the compressor **22** on the vertical axis **A** in FIG. 3. A second mounting mechanism is a second mounting platform **46a-d** that surrounds the first mounting platform **44a-d** and is upwardly and outwardly stepped from the first mounting platform **44a-d** to support the compressor **22** on the vertical axis **A** when the compressor **22** has a larger predefined dimension. See FIGS. 2 and 4. A third mounting mechanism is a third mounting platform **48a-d** that surrounds the second mounting platform **46a-d** and is upwardly and outwardly stepped from the second mounting platform **46a-d** to support the compressor on the vertical axis **A** when the compressor **22** has an even larger predefined dimension. See the hidden lines in FIG. 4. Hence, the

plurality of mounting mechanisms comprises the first **44a-d**, second **46a-d**, and third **48a-d** mounting platforms to adapt the base **40** to receive compressors of varying dimensions. The first **44a-d**, second **46a-d**, and third **48a-d** mounting platforms lie in first, second, and third planes that are parallel and equally spaced from one another.

[0023] In the preferred embodiment, the base **40** is segmented into four mounting segments or portions **42,50,52,54** in four symmetrical and equally spaced quadrants. Each of the mounting portions **42,50,52,54** have a plurality of mounting surfaces **44a-d**, **46a-d**, **48a-d** that define the platforms **44a-d,46a-d,48a-d**. It should be appreciated that the present invention could be accomplished using any number of mounting portions **42,50,52,54** and mounting surfaces **44a-d,46a-d,48a-d**, but is preferably accomplished using three or more of each.

[0024] A first mounting portion **42** includes a first plurality of mounting surfaces **44a,46a,48a** upwardly and outwardly stepped from one another relative to the vertical axis **A**. A second mounting portion **50** is spaced from the first mounting portion **42**. The second mounting portion **50** includes a second plurality of mounting surfaces **44b,46b,48b** that are upwardly and outwardly stepped from one another relative to the vertical axis **A**. A third mounting portion **52** is spaced from the first **42** and second **50** mounting portions. The third mounting portion **52** includes a third plurality of mounting surfaces **44c,46c,48c** that are upwardly and outwardly stepped from one another relative to the vertical axis **A**. A fourth mounting portion **54** is spaced from the first **42**, second **50**, and third **52** mounting portions. The fourth mounting portion **54** includes a fourth plurality of mounting surfaces **44d,46d,48d** that are upwardly and outwardly stepped from one another relative to the vertical axis **A**. As mentioned, the first **42**, second **50**, third **52**, and fourth **54** mounting portions are equally and symmetrically disposed about the base **40** and each of the mounting portions **42,50,52,54** are of equal size and dimension.

[0025] Each of the mounting portions **42,50,52,54** includes a plurality of curved front faces **56** perpendicular to the mounting surfaces **44a-d**, **46a-d**, **48a-d**. The curved front faces **56** interconnect each of the mounting surfaces **44a-d**, **46a-d**, **48a-d** to further define the mounting platforms **44a-d,46a-d,48a-d** as steps of each mounting portion **42,50,52,54**. In essence, each mounting portion **42,50,52,54** resembles a staircase having curved steps defining arcs of concentric circles that increase in length with each higher step. More specifically, the curved front faces **56** of each mounting portion

42,50,52,54 define arcs of the same concentric circles. In other words, the curved front faces **56** of one mounting portion **42** are spaced from the vertical axis **A** of the base **40** in the same manner as all other mounting portions **50,52,54**.

[0026] A rim **58** surrounds each of the third or uppermost mounting surfaces **48a-d** of each mounting portion **42,50,52,54**. Each rim **58** has a curved front face **60** and a curved back face **62** to provide support to the compressor **22** when the compressor **22** is mounted to the third or uppermost mounting surfaces **48a-d** of each mounting portion **42,50,52,54**.

[0027] Referring to FIGS. 2 and 4, the compressor **22** includes a bracket **64** engaging each of the mounting portions **42,50,52,54** on one of the first **44a-d**, second **46a-d**, and third **48a-d** mounting platforms. The bracket **64** is supported by one of the mounting surfaces **44a-d, 46a-d, 48a-d** of each mounting portion **42,50,52,54**.

[0028] Referring specifically to FIG. 3, a plurality of insert-molded fasteners **66** are molded into each of the mounting portions **42,50,52,54** at each of the mounting surfaces **44a-d, 46a-d, 48a-d** to facilitate fastening of the bracket **64** to the mounting portions **42,50,52,54**. Preferably, the insert-molded fasteners **66** are nuts, and bolts are used to secure the bracket **64** of the compressor **22** to the mounting portions **42,50,52,54**. The bracket **64** includes a plurality of arms **68** radially extending therefrom with each of the arms **68** defining a bore therein. The bolts are placed through the bores into the insert-molded nuts **66** and tightened into position to secure the compressor **22** to the mounting portions **42,50,52,54**.

[0029] In an alternative embodiment, shown in FIGS. 2A and 3A, the first **44a-d**, second **46a-d**, and third **48a-d** mounting platforms are replaced by a single mounting platform. In this embodiment, the first, second, and third mounting mechanisms are further defined as first **66a**, second **66b**, and third **66c** pluralities of insert-molded fasteners outwardly spaced from the vertical axis **A**. See FIG. 3A. Hence, the pluralities of insert-molded fasteners **66a,66b,66c** adapt the base **40** to receive compressors of varying dimensions. In particular, the insert-molded fasteners **66a,66b,66c** are insert-molded nuts **66a,66b,66c** and bolts extend through the bracket **64** of the compressor **22** to engage one of the first **66a**, second **66b**, and third **66c** pluralities of insert-molded nuts **66a,66b,66c**. The plurality of insert-molded nuts **66a,66b,66c** used to secure the compressor **22** to the base **40** depends on the predefined dimension of the compressor **22**. The compressor **22** thereby engages one of the pluralities of the insert-molded nuts

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[0030] In another … …nisms may be further defined as the plural… …nension based on the predefined dimension … …mension, e.g., width and/or length, to enga… …mpressor 22 to the base 40.

[0031] In still anothe… …essor 22 may be removed and the pluralit… …a plurality of pockets sized to fit compressors of vary… …ons. In this instance, a rubber gasket or boot slides over the compressor 22 to provide a snug fit in one of the plurality of pockets.

[0032] The plurality of mounting mechanisms of all embodiments may be configured to accommodate compressors of varying dimension, e.g., shape and/or size. For instance, each of the first **44a-d**, second **46a-d**, and third **48a-d** mounting platforms could assume a different shape. One could be oval, one circular, and one rectangular. Likewise, the insert-molded fasteners **66a,66b,66c** could also form different-shaped patterns to accommodate compressors of varying shape and/or size.

[0033] Referring to FIGS. 2-4, in all embodiments, a first plurality of guide posts **70** upwardly extend from the base **40** and are integrally formed with the base **40**. The guide posts **70** are generally block-shaped, but decrease slightly in perimeter as they extend upwardly from the base to a top surface to facilitate assembly.

[0034] A plurality of support channels for receiving the condenser **24** are defined in the base **40** about a periphery thereof and between the plurality of guide posts **70**. More specifically, the base **40** defines outer support channels **74** about the periphery thereof and inner support channels **76** stepped upwardly and inwardly from the outer support channels **74**. The condenser **24** has a predefined dimension and is supported by and seated within at least one of the outer **74** and inner **76** support channels based on the predefined dimension. In other words, the condenser **24** may be seated in the deeper, outer support channel **74**, or the condenser **24** could be seated in the shallower, inner support channel **76** depending on the predefined dimension. In the latter instance, the condenser **24** spans across the outer support channel **74**, but is spaced therefrom to define a small gap. In addition, since the outer **74** and inner **76** support channels are defined on all sides of the base **40**, the base **40** is adapted to receive one or more of the

condensers **24**, in series or parallel, and the sizes of the condensers may be mixed and matched to finish out the condensing unit **28**.

[0035] The mounting portions **42,50,52,54** define two plumbing channels **78** symmetrically interposed therebetween to further define the quadrants of the base **40**. These plumbing channels **78** cross one another at the vertical axis **A** of the base **40**. The plumbing channels **78** are used to route the fluid conduits **36**, as shown in FIG. 2, and to route electrical wires/cables. The plumbing channels **78** also interrupt the outer **74** and inner **76** support channels of the base **40** on each side of the base **40**. In alternative embodiments, inserts (not shown) could be used to cover ends of the plumbing channels **78** that are not used.

[0036] A plurality of legs **80** are integrally formed with the base **40** and downwardly extend therefrom to define a space **82** between the base **40** and a support surface **84**. The space **82** facilitates moving the condensing unit **28** with a forklift or the like.

[0037] Referring to FIGS. 2, 5, and 6, the chassis **38** further includes a plurality of guide rails **86**, each having proximal **88** and distal **90** ends and defining a central aperture **92** therebetween. The guide rails **86** are in mating engagement with the first plurality of guide posts **70**. More specifically, at the distal **90** end of each guide rail **86**, the central aperture **92** is positioned over one of the guide posts **70**. The guide posts **70** and guide rails **86** are sized to prevent significant lateral movement of the guide rails **86** once in position over the guide posts **70**. In the preferred embodiment, four guide rails **86** are supported by four guide posts **70** upwardly extending from the base **40**.

[0038] Referring specifically to FIGS. 5 and 6, the guide rails **86** define a plurality of receiving channels **94** extending between the proximal **88** and distal **90** ends thereof. The receiving channels **94** are aligned with the outer **74** and inner **76** support channels of the base **40**. The condenser **24** is seated within at least one of the support channels **74,76** of the base **40** and at least one of the receiving channels **94** of two guide rails **86**. Since, the receiving channels **94** are aligned with the support channels **74,76**, the condenser **24** is seated in the receiving channels **94** in the same manner as previously described for the support channels **74,76**. For instance, if the condenser **24** is seated within the shallower inner support channel **76**, the condenser **24** is also seated within the shallower receiving channel **94**, as best shown in FIG. 6. Alternatively, if the condenser **24** is seated within the deeper outer support channel **74**, the condenser **24** is seated within the deeper receiving channel **94**, as best illustrated by the additional, phantom condenser in FIG. 5.

[0039] The condenser **24** interconnects two of the guide rails **86**. Referring specifically to FIG. 6, each guide rail **86** has four sides with two of the four sides being finishing sides and the other two sides defining the receiving channels **94**. It should be appreciated that in the preferred embodiment, the condensing unit **28** is adapted to receive up to four condensers **24** by way of the receiving channels **94** in the guide rails **86** and the support channels **74,76** in the base **40**.

[0040] Still referring to FIG. 6, each of the guide rails **86** defines two grooves **96** adjacent to the receiving channels **94** that extend between the proximal **88** and distal **90** ends. Three close-out panels **98** interconnect the guide rails **86** to further define the chassis **38** and enclose the compressor **22**. Each close-out panel **98** is seated within one groove **96** of each of two guide rails **86**. The close-out panels **98** rest along upper edges of the base **40**. The guide rails **86** and close-out panels **98** could be formed from aluminum, plastic, sheet metal, or any other cost-effective material.

[0041] It should be appreciated that the close-out panels **98** are used in the condensing unit **28** to finish the sides of the chassis **38** that do not include the condenser **24**. In other words, in the case in which the chassis **38** has four sides, as shown in FIG. 2, each of the sides can either include a condenser **24**, or a close-out panel **98**. In this instance, at least one of the condensers **24** must be positioned on at least one side. Therefore, the three close-out panels **98** finish the other three sides. In alternative embodiments in which two condensers **24** are used, the two condensers **24** would be positioned at two sides and two close-out panels **98** would finish the other two sides. Hence, the condensing unit **28** is modular and interchangeable.

[0042] A decorator panel (not shown) could outwardly cover the condenser **24** by sliding the decorator panel into at least one of the grooves **96** of the two guide rails **86** on either side of the condenser **24**. Here, the decorator panel includes a substantial amount of air space to allow air to move through the condensing unit **28**. The decorator panel could be made from aluminum, plastic, sheet metal, or any other cost-effective material. The decorator panel could be punched out to spell an address or name or to display a design.

[0043] Referring to FIGS. 2 and 2A, a cap **100** having upper **102** and lower **104** surfaces is spaced from the base **40** to complete the chassis **38**. A second plurality of guide posts **106**, similar to the first plurality of guide posts **70**, downwardly extend from the cap **100** and are in mating engagement with the central apertures **92** of the guide rails

86 at the proximal **88** ends thereof such that the guide rails **86** interconnect the cap **100** and the base **40**. The second plurality of guide posts **106** are spaced and distributed along the lower surface **104** of the cap **100** as though the second plurality of guide posts **106** were mirror images of the first plurality of guide posts **70**. The lower surface **104** of the cap **100**, in the preferred embodiment, also includes outer and inner support channels (not shown) between the second plurality of guide posts **106** that are mirror images of the outer **74** and inner **76** support channels of the base **40**. Again, similar to the base **40**, the close-out panels **98** abut lower edges of the cap **100**. In essence, the topology of the lower surface **104** of the cap **100** mirrors the topology of the base **40**. This symmetry between the cap **100** and the base **40** ensures that the guide rails **86** are perpendicular to the cap **100** and base **40** and the condenser **24** and close-out panels **98** easily and snugly fit between the cap **100** and base **40** to provide a robust structure.

[0044] The cap **100** supports a fan unit **108** comprising a fan bracket **110**, a fan motor **111**, and a fan **113**. The cap **100** defines an insert aperture **112** therein for receiving the fan unit **108** and the fan bracket **110** includes a lip **114** for resting on the upper **102** surface of the cap **100** thereby supporting the fan unit **108** such that the fan unit **108** can easily be removed from the cap **100**. The fan bracket **110** defines a plurality of mounting bores **116** for fastening the fan bracket **110** to the cap **100**. This mounting configuration of the fan unit **108** allows an installer to interchange fan units of varying capacity quickly and easily. For example, different fan and/or motor combinations could be utilized to vary the capacity of the fan unit **108**. The fan unit **108** draws air across the condenser **24** to remove heat from the refrigerant in the condenser **24**. Holes (not shown) may be drilled in the cap **100** and/or base **40** to facilitate drainage and prevent ponding of water on or in the condensing unit **28**.

[0045] A control unit (not shown) for controlling the fan motor **111** and compressor motor (not shown) is mounted within the chassis **38**. Power supplies to the control unit and/or fan motor **111** and compressor motor can be routed thereto via the plumbing channels **78** defined between the mounting portions **42,50,52,54**.

[0046] Once assembled, the condensing unit **28** may be secured together by using force-fit connections and conventional mechanical fasteners, as will be appreciated by those skilled in the art.

[0047] While the chassis **38** of the condensing unit **28** of the preferred embodiment described herein includes four sides, the present invention should not be so limited. The

chassis **38** could include any number of sides to accommodate multiple condensers **24** and/or close-out panels **98**. In addition, other configurations could also be anticipated by those skilled in the art in accordance with the teachings of the present invention to adapt the condensing unit **28** to receive one or more condensers **24** and to adapt the condensing unit **28** to accommodate compressors **22** and/or fan units **108** of varying capacities.

[0048] By utilizing the plurality of mounting mechanisms, the support channels **74,76**, and the mounting configuration of the fan unit **108**, several different combinations of compressors, condensers, and/or fan units can be used in the condensing unit **28** to vary efficiency, such as varying a particular seasonal energy efficiency rating (SEER), and/or to vary capacity. Table 1 provides a small sample of the potential combinations that could be used:

TABLE 1

No. of Condensers	**Fan Unit**	**Compressor**
1	Fan A	Compressor A
2	Fan A	Compressor A
2	Fan A	Compressor B
2	Fan B	Compressor B
3	Fan B	Compressor C
4	Fan B	Compressor C
4	Fan C	Compressor D
4	Fan D	Compressor D

[0049] In addition to the versatility in configuring the condensing unit **28**, the condensing unit **28** is also easily upgraded due to its modular and upgradable characteristics. For example, if the climate-controlled area **14** increased in size, e.g., an addition on a home, the condensing unit **28** for that home could be upgraded on-site instead of simply being replaced. A close-out panel **98** or two could be quickly removed and condensers **24** put in their place, the fan unit **108** could be replaced with an increased capacity fan unit **108**, and/or the compressor **22** could be upgraded. Thus providing the additional capacity and/or efficiency needed for the home. Of course, given the versatility, adaptability, and upgradability of the condensing unit **28**, any new combination is imaginable.

[0050] Obviously, many modifications and variations of the present invention are

possible in light of the above teachings. The invention may be practiced otherwise than as specifically described within the scope of the appended claims.